server. The flavor, while sufficiently literary, lacks a certain essence to be caught up only from the activities of the observatory.

And yet it was expected that a volume counting Miss Clerke, the graceful, accurate and forceful author of 'A Popular History of Astronomy during the Nineteenth Century,' among its sponsors would not be lacking in vital interest. Her contributions to 'Astronomy' have not fallen below her former high standard, except in very few particulars. Especially noteworthy and able are the pages on the history of the achievements of gravitational astronomy of the period immediately succeeding Newton. But by the time the modern stage of spectroscopic astronomy is reached one feels a lack of the former easy swing of her pen, and one also regrets to notice a trace of that peculiar English tendency to ignore foreign scientific achievement. How the judicious pen of Miss Clerke could refrain from setting in artistic relief the grand achievements of a Kirchoff, while it does enthusiastic and just homage to a Huggins, is inexplicable except on grounds of excessive brevity. Truth to say, Miss Clerke has always seemed to repudiate insularity in all of her astronomical writings, and one would not tax her here with anything more than an unconscious bias, in certain particulars, toward her own countrymen, nor indeed generally with anything less than a most fascinating and powerful presentation of the thrilling discoveries and stupendous facts of astronomical science.

Professor Gore's review of the science of the stellar universe gives ample evidence of a determination to bring before the cultured public science fresh from its primal sources. Nearly every page bears evidence of faithful appreciation of the original contributions of astronomers and of a consistent assimilation of the vast mass of material. Although lacking somewhat in that vivacity of style characteristic of Miss Clerke, one is impressed with the conscientious fervour and decisive grasp of Professor Gore's presentation of subjects bristling with numberless suggestive facts and insuperable difficulties.

For Professor Fowler, the accomplished practical astronomer, so favorably known by his successful observational work, was reserved the more or less thankless task of furnishing the more mathematical side of the book. Ever since Laplace, under an unlucky star, rashly attempted to put mathematics into words, in the celebrated *Systéme du Monde*, we have become convinced of the necessary inadequateness of ordinary language, and even of ordinary geometry, to the expression of this class of ideas. We cannot, therefore, harshly set forth the weak points which necessarily inhere in an attempt to compress all the marvels of mathematical astronomy into less than two hundred pages of a popular account. Rather would we express the genuine surprise which one experiences in following the author's ingenuity in presenting the difficult geometrical and dynamical conceptions of the astronomer. Most interesting is the complete and accurate though condensed review of the instrumental appliances characteristic of modern astronomy.

It would be a graceless act to close this brief review of a valuable addition to the popular side of astronomy without at once complimenting the American publishers on the fair typography, and condoling with them on the binding of a book of this character in a style bereft of every element of propriety and good taste.

M. B. SNYDER.

Lehrbuch der Entwicklungsgeschichte des Menschen. Von PROFESSOR J. KOLLMANN. Jena, Fischer. 1898. 8vo. Pp. xii + 658.

Embryological literature has been again enriched by a valuable text-book by Professor Kollmann (Basel, Switzerland). As the title indicates, the work deals preeminently with *human* embryology, comparative-embryological facts being adduced only in so far as desirable for a better understanding of corresponding processes in man. The book is furnished with a considerable number of good illustrations, of which a great many are original and entirely new. Preference is given to illustrations taken from 'plastic reconstructions' and so-called 'combined drawings.' Such illustrations are, of course, especially valuable for demonstrating complicated morphological structures which in the single sections of a series are only shown in fragments. It needs, however, to be

mentioned that a few of those plastic figures are somewhat unclear, apparently due to a failure in the execution of the original drawing.

The arrangement of the contents is very convenient. We find in the first part, according to the generally accepted plan, the description of the ovum, maturation, fertilization, cleavage, formation of the germlayers and the fundamental processes in development of the embryonic body, and finally the fœtal membranes. The following chapter contains an exhaustive and very useful account of the growth and external development of the human fœtus, especially during the first two months, together with some data on measurement and the determination of age.

The second part of the book deals with the development of the *special organs*. In arranging this material the author follows the customary method of systematic anatomy, describing first the development of the skeleton and the muscular system, and then going on with that of the intestinal tract, the circulatory apparatus, the nervous system, and finally the skin and the sensory organs. Such an arrangement has many advantages and is obviously adapted especially for medical students. Scattered through the descriptive text we find also some theoretical discussions which are usually marked off from the main text by smaller type. These discussions touch upon questions of special interest for a better appreciation of certain points in human ontogenesis.

In criticising the treatment of the material in Professor Kollmann's text-book one deficiency in the reviewer's opinion seems to be rather serious—that is, the almost absolute neglect of the *histological* differentiation of the tissues in general as well as of the different organs, together with a lack of figures illustrating these processes. These processes are not only of interest for the professional embryologist, but also to a high degree for the medical student, in so far as an adequate knowledge of them is of preeminent importance for a satisfactory understanding of so many physiological and pathological processes of the organs. Hence it seems to the reviewer that in a modern text-book of embryology this important part of development should not be entirely omitted, all the more as recent investigations have thrown more light upon these very complicated processes, and as the field of *cellular* embryology will be more and more cultivated.

These deficiencies, however, in Kollmann's text-book do not interfere with its peculiar excellence, which lies in the exact *anatomical* treatment of the developing organism, together with the elucidation of the text by numerous very instructive illustrations. It is in this especially that the book forms a valuable addition to our embryological literature and deserves to be highly recommended. The different chapters are in general well balanced. The text is concise and clear. Print and reproduction of illustrations are according to the high reputation of the publisher.

Alfred Schaper.

A Primer of Psychology. By Edward Bradford Titchener. New York and London, The Macmillan Co. 1898. Pp. xvi + 314, Price, $1.

As the scientific claims of psychology are more widely recognized, there is an increasing demand for elementary text-books on the subject. Professor Titchener has in mind the difficulties of the beginner, and while there is more science and less glitter in this *Primer* than is common in courses of 'science made easy' it can scarcely fail to interest the novice as well as instruct him. The fundamental concepts are defined with unusual clearness, and every difficult point, as soon as it comes up, is carefully explained, often with the help of illustrations taken from literature or the physical sciencese

The *Primer* is not intended primarily as a course in experimental psychology. The body of the text is rather analytic, although the chief results of experimental research, such as Weber's Law, are given much space. As would be expected in a work by Professor Titchener, the whole treatment of the subject is largely influenced by this branch. Among the many practical exercises found at the end of each chapter, as much in the way of experimental demonstration is included as is practicable for classes with only a limited supply of apparatus at command. When on debated ground the author generally adheres to the theories